



SEQUENCE LISTING

<110> Gopalan, Venkat
Jovanovic, Milan
Eder, Paul S.
Giordano, Tony
Powers, Gordon D.
Xavier, K. Asish

<120> Novel Bacterial RNase P Proteins and
Their Use in Identifying Antibacterial Compounds

<130> 50093/016001

<140> US 09/516,061

<141> 2000-03-01

<160> 95

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 417

<212> DNA

<213> Streptococcus mutans

<400> 1

agatttttgg ctttttctca ttttatgata taatagtgat aatttaaata ttggagtcac 60
gttttgaaaa aagcctatcg cgtaaaaagt gataaagatt ttcaggcaat ttttactgaa 120
ggacgaagtg ttgccaatcg gaaatttgtt gtctatagtt tagaaaaaga tcaaagtcac 180
tatcgtgttg gactttcagt tggaaaaaga ttaggaaatg ctgtcgttag aaatgcgatt 240
aaacgaaaaat tgcgccatgt ccttatggaa cttggtcctt atttaggcac tcaagatttt 300
gttggtattg ctagaaaaagg tgttgaggaa cttgattata gcacgatgaa aaaaaatctg 360
gttcattgtt taaaactggc taaactgtat cagggaaggat ctattcgtga aaaagaa 417

<210> 2

<211> 477

<212> DNA

<213> Klebsiella pneumoniae

<400> 2

cgctcgtcgtg ctaaaggccg cgctcgtcgtg accgtttcca agtaataaag ctaaccctgc 60
gtgggttaagc tcgcatttcc cagggagtta cgcttgtaa ctcccagtc tttcactttc 120
gtcttccagc agccacaacg ggctggcacg ccgcaaatca ccacccctcg ccgcctgaat 180
tcgctggggc atccccgcat cggctctcacc gtcgccaaga aaaacgtgaa acgcgcacat 240
gaacgcaatc ggattaaacg tctgacgcgt gaaagttttc gtttgcgta acatgaactc 300
ccgccaatgg atttcgtggt ggtggcgaaa agaggggttg ccgacctga taaccgtgct 360
ctctcggaag cgttggaaaa attatggcgc cgccattgtc gcctggctcg cgggtcctga 420
tcggcctgat tcgagtttat cagcgcctga ttagtccgct actcgggccg cattgtc 477

<210> 3

<211> 455

<212> DNA

<213> Salmonella paratyphi

<400> 3

ctgaccgttt ccaagtaata aagctaacc ctgagtgggt aagctcgcat ttcccagga 60

RECEIVED

JAN 16 2003

TECH CENTER 1600/2900

gttacgtttg	ttaactcccg	ctcatttcac	attcgtcttc	cagcaacctc	aacgggctgc	120
acgccgcaaa	tcaccatcct	cggccgcctg	aattcgtctg	ggcatccccg	tatcgggtctt	180
accgtcgcca	agaaaaatgt	tcgacgtgcg	catgaacgca	accggattaa	acgtctgacg	240
cgtgaaagct	tccgtctgcg	ccagcatgaa	cttcctgcaa	tggatttcgt	ggtggtggcg	300
aaaaaagggg	ttgccgacct	cgataaccgt	gctctctcgg	aagcgttggg	aaaattatgg	360
cgccgccact	gtcgccctggc	tcgcgggtcc	tgatagccct	tattcgggtc	tatcaacgcc	420
tgatcagtc	gctgcttggg	cgcattgtc	gtttc			455

<210> 4
 <211> 528
 <212> DNA
 <213> Pseudomonas aeruginosa

<400> 4						
tctgtcgcgt	cgtcgcgcca	aaggccgtaa	gcgtctgacc	gtctgattta	tccggtacgg	60
gtggtgagtc	gggacttcga	ccgggacaag	cgtctactga	cagcccggca	attcagcgca	120
gtcttcgact	ctccgaccgg	caaggtcccc	ggcaagcacg	tcctgtctgt	ggcgcgcgag	180
aacgggtctcg	atcacccccg	cctgggcctg	gtgatcggca	agaagaacgt	caagctcgcc	240
gtccagcgca	atcgccctcaa	acgcctgata	cgcaaatcgt	tccgccataa	ccaggaaaacc	300
ctggctggct	gggatatcgt	ggtgatcgcg	cgcaaaggcc	tgggcgaact	ggaaaaatccg	360
gagctgcacc	agcagttcgg	caagctctgg	aaacgcctgt	tgcgcaatcg	acctcgcacg	420
gaaagccctg	ctgacgcccc	tggcgtggcc	gacggtactc	atgcataggt	cgatgcccgc	480
gcatcccgat	ccctgtagtg	tcaccccc	ttcgatgacc	cggcaccg		528

<210> 5
 <211> 510
 <212> DNA
 <213> Corynebacterium diphtheriae

<400> 5						
ccggtcgcgc	aatcgtggct	gcacgtcgta	acaagggctg	taagagcctg	accgcttaag	60
gtcactctta	caagctcgaa	tagaacgacg	gtgctacctt	cacagcacia	gtcagcaat	120
tccgaacagt	tccgcgcaac	gattcgggaag	ggcaagcgtg	ctgggaggag	caccgtcggt	180
cttcattttt	atgctgagcg	gaccgcgggc	aaccttgcaa	ccgcaggcgg	cccgcgattc	240
ggcctcggtt	tgtccaaggc	tgttggaat	gctgtgactc	gtcaccgtgt	ttcgcggcag	300
ttaaggcacg	tagtaatcgc	tatgaaagac	cagttcccag	cgtcatccca	tgttggtgtg	360
agggcgatac	cgccagcggc	gacagcaagt	tatgaggagt	tgcgggcaga	tgtgcaggca	420
gcactcgaca	agctcaaccg	caagcgataa	ggcgggtact	cgccctcgtg	ggctgggttag	480
tcgcgcattg	tttgatgcgg	tgcggttcta				510

<210> 6
 <211> 504
 <212> DNA
 <213> Chlamydia trachomatis

<400> 6						
gctacaaaaa	gtggaagaaa	tcttttaaat	cgtcgtcgcc	gtcacggcag	acattcctta	60
attgatctct	aagatctttc	atttgtgcat	cgtttaactc	tacctaaaaa	tgcccgcccta	120
ttgaaacgta	aacaatttgt	ttacgtgcag	cgttggtggc	aatattgtcg	tactgatcag	180
gcaactttac	gaatagttcc	ttctcgtcat	tcgaacatcc	gtaaagtagg	ggttactggt	240
tctaaaaaat	ttgggaaagc	ccatcagcgc	aatcgcttta	aaagaattgt	gcgagaggct	300
tttaggcatt	tgcgaccaaa	tcttcccgca	tgtcaagtgg	tagtgtctcc	taaagggggc	360
actctaccaa	atthttgtaa	actatccgcg	gatcttctta	agcatattcc	agaggctttg	420
cctctcgtaa	cttcttctaa	gtagtttttt	atthttggtca	aaaaataaaa	aaccattcca	480
cgctatagag	gcatggaatg	ggaa				504

<210> 7
 <211> 492
 <212> DNA

<213> *Vibrio cholerae*

<400> 7

```
ggcagcgtgg gccgataagt ggactaataa accactggta aagttttaca ataccaatgg 60
ctaaccacga gaagggcgag agaggcggtg ccatagtttg ccaagcaagt taaacagttc 120
ttcattgctc aaatcttgcg cgctcttttt ggcgatgaca acaaaatctt tgtagccag 180
ttgattttga tgtaagcgaa agctttctct gcaaatacgt ttgaatcgat tacggccgac 240
ggcagttttg atctgctttt taggaaccgc gagtcccaaa cgaggatgag aaaggttatt 300
agcgcgagcg atgattgtga gatgaggaga accagcactg tgagcttgct ggaagacttt 360
ttgataatgt tcgggagtta acaaacgtaa ctcccgattg aatgcgtacg tactcaaaat 420
aattcgagat tattttgaca ggcgcttacg gccttttgca cgacgtgcat tcagaacttt 480
acgaccgttc gc 492
```

<210> 8

<211> 492

<212> DNA

<213> *Neisseria gonorrhoea*

<400> 8

```
atgttccttg tatgggaaac ccgttgccgt ctgaaccttg cctgcagggt accgtttctga 60
tcataacctgt ttcccgcatc cggttgccgg gttgccgaac atgagttgtg ccagttccgc 120
ccttgccctgt tttgcggtag ccctgtcgaa tttccggcgg acgcgcacga cgaaatcctg 180
aggcggcagc cggtttttgt tcaatctgaa ccagtcgcgg atgacgcggt tcatatagtt 240
ccgctcgttg gcgcgtttg cggttttttt gccgaccacc agaccgatgc ggggatggtc 300
cagcccgttg ccgtttgagc gcgaaacttg cagcaggtcg cggctgcggc ggtttctgaa 360
tgcaaaaacg gatgaaaaat catccgtttt taacaagcgg tactgccttc cgaagcggta 420
gtccaaaatt acactgccag gcgtttgcgg cctttggcac ggcgtgcggc caatactgcg 480
cgtccgccgc gt 492
```

<210> 9

<211> 492

<212> DNA

<213> *Neisseria meningitidis*

<400> 9

```
tgttccttag tatgggaaac ccgttgccgt ctgaaccttg cctgcagagt accgtttctga 60
tcatgcctgt ttctgcacac cggttgccgg gttgccgaac atgagttgtg ccagttccgc 120
ccttgccctgt tttgcggtag ccctgtcgaa tttacggcgg acgcgcacga cgaaatcctg 180
cggcggcagc cggtttttgt tcaatctgaa ccagtcgcgg atgacgcgct tcatataatt 240
tcgttcgttg gcgcgtttg cggttttttt gccgaccacc agaccgatgc ggggatgatc 300
cagcccgttg ccgtttgaac gcgaaacttg cagcaggtcg cggctgcggc ggtttctgaa 360
tgcaaaaacg gatgaaaaat catccgtttt caacaagcgg tactgccttc cgaagcggta 420
gtccaaaatt acaccgccag gcgtttgcgg cctttggcgc gccgtgcggc caatactgcg 480
cgtccgccgc gc 492
```

<210> 10

<211> 462

<212> DNA

<213> *Streptococcus pyogenes*

<400> 10

```
gttacctcac cagcaccaca ggccactaat aatagaacta aggggactat tcttgcaatt 60
ttaatgtttt tcttactctt caaaaccttt ctcaagcaat tgtgctaact ttaaaacatg 120
atgtaaattt tgttgaagct cttgatactc caaagattcg acacccttac gggcaatcac 180
cacgaaatcc tctgacttca gctgatgcc taatgccatg ataacatgac gtatctttcg 240
tttgactgca tttctggtga ctgcatttcc tattttttta ccgacagaaa taccacacag 300
gaagtggctt tggcctctat ttaaatgata aatgacaaat tttcgatttg ctgtactttt 360
tccatcctta aatatggctt ggaaatcttt ctacgcgttg acacgatagg tcttcttcaa 420
aatttaactc caatatctaa attattacca ttataaccaca tc 462
```

<210> 11
 <211> 492
 <212> DNA
 <213> Bordetella pertussis

<400> 11
 ccacccagg gctgaggaag taccggtaaa accggatcgg ggcgataagc agtctcctga 60
 tcatcgcgct atccgtgtga agtgagcatc tacttcggcg cgcgccgagc gtttcagggc 120
 cgtgaggctt gccggtgtca gcttgctgtg cagccgcacc acgtaatcct gggccggcag 180
 ggcaagccgg cgagcccga acgcttcgag gatgaccgc ttcaaggat tgccgctcac 240
 ggcgcgggcg gcaaaacgct tggcgatcac caggcccagg cgcgcgcgcg ccggctggctc 300
 atcagcagg gacagggcg aggcgctgac aataaagaaa gccctcggg ccagtcgccg 360
 gcctttgagg gcggcggcaa actcggagg gcgatgcaat cgcgcctccg cagggagcgt 420
 ggcgcgcggc atgggtgacg tgacggagac tggcgacggg gccggcggcg atgctcctgt 480
 tacaggcaat cc 492

<210> 12
 <211> 534
 <212> DNA
 <213> Porphyromonas gingivalis

<400> 12
 agaagaaaat ggggagcagt aagagttgca cgagaaaagc cttgatcagt cgcacgtat 60
 ttactcgttt ttcaaagccg atgaaggtag atttcggca attctgatca gactcttttg 120
 catcgctctc tccactgtac gaaagtcagg aagttcatcc gatactacca taaatgcaat 180
 agtagcatag atctgtctct cttggaggac atcgttcagg aggtgtttgt tgagccgata 240
 agcctccctg accaaacgct tgaccctatt gcgcttcacg gctcgccata accttttctt 300
 tgctacgctt accagcatgg aggaatatgc aactcgatgc tccgatccca gacggtagac 360
 tacgcgtaga ggataaacga caaacgcctt gccttcgcca aagaccgtat tgatttcac 420
 gcgaagatag aggcgttcgc ttttgatag gccgaatgta ggcggagagg tcatttccc 480
 ttgaggtaat cctctaagc catagccata gaaggatatt gtcggtcgg cgca 534

<210> 13
 <211> 495
 <212> DNA
 <213> Streptococcus pneumoniae

<400> 13
 tcgctagtta cccattagtg cgcacaggct gtcattgatta acagagacag tcctagcaaa 60
 ctagtcaact ttagtttctt tttcactccc atttccttcc cgttaaatct ttgataattt 120
 taatacatgg agtagatttt tctccatctc tgcgtatccc aaggtttcga ctctttttcg 180
 agcaatgaca acaaaagtcga catcttctac cagactccct tttgcattct ggataaatatg 240
 ccgaatccgt cgcttaattt gatttctagt gacggcattc ccagttttt tgctaactga 300
 tagacctact cgaaaacggt ttttctggtt ttctaattgg tagaccacaa atttgcgatt 360
 agcaaaactt gtccctcct tgaaaatcgc cttaaaatct ttctctctt ttacacgaaa 420
 gtttttcttc aaaactcaac tccatctatt aaattactac tattatacca tatttttcaa 480
 aaaagccaat catag 495

<210> 14
 <211> 465
 <212> DNA
 <213> Clostridium difficile

<400> 14
 tcctttaata tataaattat tttattcaaa gtcattaacc tccatattta tagcatacaa 60
 ttaaatagaa atatccgttc ttttaactaa attttttata gacttgctta tgtctttaaa 120
 agtagcatcc ttactagata cccttgctat aaatactata tcatatccag gcttaatttt 180
 ttcatcaata tttaatctgt aggcctcttt tattaatctt ctactctat tcctagtaat 240
 agcttttctt actttttttg aaacagaaat acctactcta ctataatctg atttattttt 300

aagtatatat attactaaat atttgtttgc aaaagatttg ccgtgtttat atacttttct 360
 aaaatcagag tcttttttca acccttttagt cctattaaag tccatagtta acctccataa 420
 acacagctat gaatcgtaat tatttacaca aaaaggccac ctttg 465

<210> 15
 <211> 447
 <212> DNA
 <213> Camphylobacter jejuni

<400> 15
 aagcagcggg ttttaaaggg cttagaatt tctgataaaa acggagtatt tttaggcata 60
 tcatttgaaa cattctagtt ttttcaatcc ccattttaga tttttttcta acctagaaaa 120
 agaaagttca gtgatttcat ttttagctac aaaaatatat ttgccatctt gaagatatct 180
 ttcaaactta gcaaacaaag ctcttaaaat tcgttttgaa cgattttcta cactgcttt 240
 tccaactttt ttactagcaa caactgctat ttttttttca taactattca gataaaaaat 300
 gatcacacct tcgcaatgcc attttttgcc tactttatat acagatgaaa attcctcgtt 360
 tgtgctaaat ttatcaaaat ttttcacaca gcaagtcttt ttctaccttt agcgcgtctt 420
 gcattgatca ctttgcgacc attttta 447

<210> 16
 <211> 480
 <212> DNA
 <213> Baccillus anthracis

<400> 16
 taaacctaat ttctttttca aagcctactc ctctttgtat cggtatgtat atagtgtaat 60
 tcatttccctt acgctacttt ttattctttt cataccagag cgtttaaaga catgaattaa 120
 gcttttcttt aattcttcat atgtcatctc tgcacaaggc ttctttgcta ttataacaaa 180
 atcttttcca gaatctatct catcttttaa ttctgtgatc gactggcgaa tcatacgttt 240
 aattcggtta cgcactactg catttcctat cttcttgctg acagaaaggc caatacgaaa 300
 gtttggtgctg tcttctttat ctagtgtata gacaacaaat tgacgattcg cattcgattt 360
 tcctttttga aaaaccgtct ggaattcatc attctttttt atacgatgtt ttttcttcat 420
 atcaattgac actcctgtag ttcacagcg gaaattcact attattagaa aaaaagacca 480

<210> 17
 <211> 480
 <212> DNA
 <213> Mycobacterium avium

<400> 17
 gtccgcgggc gacggttcgg ccggcgccgc gaatggccgc gcccgaccgc gccgggtccgg 60
 tcacggcccg gttcccgccg gcatgcgccg caggcaccgc tgcagttcct gcgccaggcg 120
 cgccgacgac gcggtccggc ttccggggcag cgcgcgaaat accagccggt cggatgggtt 180
 gagttcgccg agcaggggcc gggccacgtg acgcagccgg cggggccacgc ggtgtcgttg 240
 caccgcccgc ccgacggcct tcccagcgac cagcccagacc cgtggggccc cggattcgtc 300
 gtcgggttcg gagtcgcgcc ggaggtggac gacgatgtcg ggctgcgcca tgcgggttcc 360
 gtgcttcacc gtcgcgtcaa actcgggttg ccgcgtcatg cggttgcgtg cgggaagcac 420
 cgcgaaagac ctgacgtgcg atcaggcaga gagcgcgcgg cgacccttgc ggcgccgacc 480

<210> 18
 <211> 474
 <212> DNA
 <213> Staphylococcus aureus

<400> 18
 gttataagct caatagaagt ttaaatatag cttcaaataa aaacgataaa taagcgagtg 60
 atgttattgg aaaaagctta ccgaattaaa aagaatgcag attttcagag aatatataaa 120

aaaggtcatt ctgtagccaa cagacaattt gttgtataca cttgtaataa taaagaaata 180
gaccattttc gcttaggtat tagtgtttct aaaaaactag gtaatgcagt gttaagaaac 240
aagattaaaa gagcaatacg tgaaaatttc aaagtacata agtcgcataat attggccaaa 300
gatattattg taatagcaag acagccagct aaagatatga cgactttaca aatacagaat 360
agtcttgagc acgtacttaa aattgccaaa gtttttaata aaaagattaa gtaaggatag 420
ggtaggggaa ggaaaacatt aaccactcaa cacatcccga agtcttacct caga 474

<210> 19
<211> 474
<212> DNA
<213> Staphylococcus aureus

<400> 19
gttataagct caatagaagt ttaaatatag cttcaaataa aaacgataaa taagcgagtg 60
atgttattgg aaaaagctta ccgaattaaa aagaatgcag attttcagag aatatataaa 120
aaaggtcatt ctgtagccaa cagacaattt gttgtataca cttgtaataa taaagaaata 180
gaccattttc gcttaggtat tagtgtttct aaaaaactag gtaatgcagt gttaagaaac 240
aagattaaaa gagcaatacg tgaaaatttc aaagtacata agtcgcataat attggccaaa 300
gatattattg taatagcaag acagccagct aaagatatga cgactttaca aatacagaat 360
agtcttgagc acgtacttaa aattgccaaa gtttttaata aaaagattaa gtaaggatag 420
ggtaggggaa ggaaaacatt aaccactcaa cacatcccga agtcttacct caga 474

<210> 20
<211> 119
<212> PRT
<213> Streptococcus mutans

<400> 20
Val Leu Lys Lys Ala Tyr Arg Val Lys Ser Asp Lys Asp Phe Gln Ala
1 5 10 15
Ile Phe Thr Glu Gly Arg Ser Val Ala Asn Arg Lys Phe Val Val Tyr
20 25 30
Ser Leu Glu Lys Asp Gln Ser His Tyr Arg Val Gly Leu Ser Val Gly
35 40 45
Lys Arg Leu Gly Asn Ala Val Val Arg Asn Ala Ile Lys Arg Lys Leu
50 55 60
Arg His Val Leu Met Glu Leu Gly Pro Tyr Leu Gly Thr Gln Asp Phe
65 70 75 80
Val Val Ile Ala Arg Lys Gly Val Glu Glu Leu Asp Tyr Ser Thr Met
85 90 95
Lys Lys Asn Leu Val His Val Leu Lys Leu Ala Lys Leu Tyr Gln Glu
100 105 110
Gly Ser Ile Arg Glu Lys Glu
115

<210> 21
<211> 119
<212> PRT
<213> Klebsiella pneumoniae

<400> 21
Val Val Lys Leu Ala Phe Pro Arg Glu Leu Arg Leu Leu Thr Pro Ser
1 5 10 15
His Phe Thr Phe Val Phe Gln Gln Pro Gln Arg Ala Gly Thr Pro Gln
20 25 30
Ile Thr Ile Leu Gly Arg Leu Asn Ser Leu Gly His Pro Arg Ile Gly
35 40 45
Leu Thr Val Ala Lys Lys Asn Val Lys Arg Ala His Glu Arg Asn Arg

50		55		60
Ile Lys Arg Leu Thr Arg Glu Ser Phe Arg Leu Arg Gln His Glu Leu				
65		70		80
Pro Pro Met Asp Phe Val Val Val Ala Lys Arg Gly Val Ala Asp Leu				
	85		90	95
Asp Asn Arg Ala Leu Ser Glu Ala Leu Glu Lys Leu Trp Arg Arg His				
	100		105	110
Cys Arg Leu Ala Arg Gly Ser				
115				

<210> 22
 <211> 110
 <212> PRT
 <213> Salmonella paratyphi

<400> 22
Val Thr Phe Val Asn Ser Arg Ser Phe His Ile Arg Leu Pro Ala Thr
1 5 10 15
Ser Thr Gly Cys Thr Pro Gln Ile Thr Ile Leu Gly Arg Leu Asn Ser
20 25 30
Leu Gly His Pro Arg Ile Gly Leu Thr Val Ala Lys Lys Asn Val Arg
35 40 45
Arg Ala His Glu Arg Asn Arg Ile Lys Arg Leu Thr Arg Glu Ser Phe
50 55 60
Arg Leu Arg Gln His Glu Leu Pro Ala Met Asp Phe Val Val Val Ala
65 70 75 80
Lys Lys Gly Val Ala Asp Leu Asp Asn Arg Ala Leu Ser Glu Ala Leu
85 90 95
Glu Lys Leu Trp Arg Arg His Cys Arg Leu Ala Arg Gly Ser
100 105 110

<210> 23
 <211> 135
 <212> PRT
 <213> Pseudomonas aeruginosa

<400> 23
Val Val Ser Arg Asp Phe Asp Arg Asp Lys Arg Leu Leu Thr Ala Arg
1 5 10 15
Gln Phe Ser Ala Val Phe Asp Ser Pro Thr Gly Lys Val Pro Gly Lys
20 25 30
His Val Leu Leu Leu Ala Arg Glu Asn Gly Leu Asp His Pro Arg Leu
35 40 45
Gly Leu Val Ile Gly Lys Lys Asn Val Lys Leu Ala Val Gln Arg Asn
50 55 60
Arg Leu Lys Arg Leu Ile Arg Glu Ser Phe Arg His Asn Gln Glu Thr
65 70 75 80
Leu Ala Gly Trp Asp Ile Val Val Ile Ala Arg Lys Gly Leu Gly Glu
85 90 95
Leu Glu Asn Pro Glu Leu His Gln Gln Phe Gly Lys Leu Trp Lys Arg
100 105 110
Leu Leu Arg Asn Arg Pro Arg Thr Glu Ser Pro Ala Asp Ala Pro Gly
115 120 125
Val Ala Asp Gly Thr His Ala
130 135

<210> 24
 <211> 129
 <212> PRT
 <213> Corynebacterium diphtheriae

<400> 24
 Val Thr Leu Thr Ser Ser Asn Arg Thr Thr Val Leu Pro Ser Gln His
 1 5 10 15
 Lys Leu Ser Asn Ser Glu Gln Phe Arg Ala Thr Ile Arg Lys Gly Lys
 20 25 30
 Arg Ala Gly Arg Ser Thr Val Val Leu His Phe Tyr Ala Glu Ala Thr
 35 40 45
 Ala Gly Asn Leu Ala Thr Ala Gly Gly Pro Arg Phe Gly Leu Val Val
 50 55 60
 Ser Lys Ala Val Gly Asn Ala Val Thr Arg His Arg Val Ser Arg Gln
 65 70 75 80
 Leu Arg His Val Val Ile Ala Met Lys Asp Gln Phe Pro Ala Ser Ser
 85 90 95
 His Val Val Val Arg Ala Ile Pro Pro Ala Ala Thr Ala Ser Tyr Glu
 100 105 110
 Glu Leu Arg Ala Asp Val Gln Ala Ala Leu Asp Lys Leu Asn Arg Lys
 115 120 125
 Arg

<210> 25
 <211> 119
 <212> PRT
 <213> Chlamydia trachomatis

<400> 25
 Val His Arg Leu Thr Leu Pro Lys Ser Ala Arg Leu Leu Lys Arg Lys
 1 5 10 15
 Gln Phe Val Tyr Val Gln Arg Cys Gly Gln Tyr Cys Arg Thr Asp Gln
 20 25 30
 Ala Thr Leu Arg Ile Val Pro Ser Arg His Ser Asn Ile Arg Lys Val
 35 40 45
 Gly Val Thr Val Ser Lys Lys Phe Gly Lys Ala His Gln Arg Asn Arg
 50 55 60
 Phe Lys Arg Ile Val Arg Glu Ala Phe Arg His Val Arg Pro Asn Leu
 65 70 75 80
 Pro Ala Cys Gln Val Val Val Ser Pro Lys Gly Gly Thr Leu Pro Asn
 85 90 95
 Phe Gly Lys Leu Ser Ala Asp Leu Leu Lys His Ile Pro Glu Ala Leu
 100 105 110
 Pro Leu Val Thr Ser Ser Lys
 115

<210> 26
 <211> 122
 <212> PRT
 <213> Vibrio cholerae

<400> 26
 Ser Arg Ile Ile Leu Ser Thr Tyr Ala Phe Asn Arg Glu Leu Arg Leu
 1 5 10 15
 Leu Thr Pro Glu His Tyr Gln Lys Val Phe Gln Gln Ala His Ser Ala

		20						25					30			
Gly	Ser	Pro	His	Leu	Thr	Ile	Ile	Ala	Arg	Ala	Asn	Asn	Leu	Ser	His	
		35					40					45				
Pro	Arg	Leu	Gly	Leu	Ala	Val	Pro	Lys	Lys	Gln	Ile	Lys	Thr	Ala	Val	
		50				55					60					
Gly	Arg	Asn	Arg	Phe	Lys	Arg	Ile	Cys	Arg	Glu	Ser	Phe	Arg	Leu	His	
65					70					75					80	
Gln	Asn	Gln	Leu	Ala	Asn	Lys	Asp	Phe	Val	Val	Ile	Ala	Lys	Lys	Ser	
				85					90					95		
Ala	Gln	Asp	Leu	Ser	Asn	Glu	Glu	Leu	Phe	Asn	Leu	Leu	Gly	Lys	Leu	
			100					105								
Trp	Gln	Arg	Leu	Ser	Arg	Pro	Ser	Arg	Gly							
		115					120									

<210> 27
 <211> 123
 <212> PRT
 <213> Neisseria gonorrhoea

Val	Ile	Leu	Asp	Tyr	Arg	Phe	Gly	Arg	Gln	Tyr	Arg	Leu	Leu	Lys	Thr	
1				5					10					15		
Asp	Asp	Phe	Ser	Ser	Val	Phe	Ala	Phe	Arg	Asn	Arg	Arg	Ser	Arg	Asp	
			20					25					30			
Leu	Leu	Gln	Val	Ser	Arg	Ser	Asn	Gly	Asn	Gly	Leu	Asp	His	Pro	Arg	
		35					40					45				
Ile	Gly	Leu	Val	Val	Gly	Lys	Lys	Thr	Ala	Lys	Arg	Ala	Asn	Glu	Arg	
	50					55					60					
Asn	Tyr	Met	Lys	Arg	Val	Ile	Arg	Asp	Trp	Phe	Arg	Leu	Asn	Lys	Asn	
65					70					75					80	
Arg	Leu	Pro	Pro	Gln	Asp	Phe	Val	Val	Arg	Val	Arg	Arg	Lys	Phe	Asp	
				85					90					95		
Arg	Ala	Thr	Ala	Lys	Gln	Ala	Arg	Ala	Glu	Leu	Ala	Gln	Leu	Met	Phe	
			100					105								
Gly	Asn	Pro	Ala	Thr	Gly	Cys	Gly	Lys	Gln	Val						
		115					120									

<210> 28
 <211> 123
 <212> PRT
 <213> Neisseria meningitidis

Val	Ile	Leu	Asp	Tyr	Arg	Phe	Gly	Arg	Gln	Tyr	Arg	Leu	Leu	Lys	Thr	
1				5					10					15		
Asp	Asp	Phe	Ser	Ser	Val	Phe	Ala	Phe	Arg	Asn	Arg	Arg	Ser	Arg	Asp	
			20					25					30			
Leu	Leu	Gln	Val	Ser	Arg	Ser	Asn	Gly	Asn	Gly	Leu	Asp	His	Pro	Arg	
		35					40					45				
Ile	Gly	Leu	Val	Val	Gly	Lys	Lys	Thr	Ala	Lys	Arg	Ala	Asn	Glu	Arg	
	50					55					60					
Asn	Tyr	Met	Lys	Arg	Val	Ile	Arg	Asp	Trp	Phe	Arg	Leu	Asn	Lys	Asn	
65					70					75					80	
Arg	Leu	Pro	Pro	Gln	Asp	Phe	Val	Val	Arg	Val	Arg	Arg	Lys	Phe	Asp	
				85					90					95		
Arg	Ala	Thr	Ala	Lys	Gln	Ala	Arg	Ala	Glu	Leu	Ala	Gln	Leu	Met	Phe	
			100					105								

Gly Asn Pro Ala Thr Gly Cys Arg Lys Gln Ala
 115 120

<210> 29
 <211> 113
 <212> PRT
 <213> Streptococcus pyogenes

<400> 29
 Val Lys Arg Glu Lys Asp Phe Gln Ala Ile Phe Lys Asp Gly Lys Ser
 1 5 10 15
 Thr Ala Asn Arg Lys Phe Val Ile Tyr His Leu Asn Arg Gly Gln Asp
 20 25 30
 His Phe Arg Val Gly Ile Ser Val Gly Lys Lys Ile Gly Asn Ala Val
 35 40 45
 Thr Arg Asn Ala Val Lys Arg Lys Ile Arg His Val Ile Met Ala Leu
 50 55 60
 Gly His Gln Leu Lys Ser Glu Asp Phe Val Val Ile Ala Arg Lys Gly
 65 70 75 80
 Val Glu Ser Leu Glu Tyr Gln Glu Leu Gln Gln Asn Leu His His Val
 85 90 95
 Leu Lys Leu Ala Gln Leu Leu Glu Lys Gly Phe Glu Ser Glu Glu Lys
 100 105 110
 His

<210> 30
 <211> 123
 <212> PRT
 <213> Bordetella pertussis

C1
 Cont
 <400> 30
 Met Pro Arg Ala Thr Leu Pro Ala Glu Ala Arg Leu His Arg Pro Ser
 1 5 10 15
 Glu Phe Ala Ala Ala Leu Lys Gly Arg Arg Leu Ala Arg Gly Ala Phe
 20 25 30
 Phe Ile Val Ser Ala Ser Pro Cys Ala Pro Ala Asp Asp Gln Pro Ala
 35 40 45
 Arg Ala Arg Leu Gly Leu Val Ile Ala Lys Arg Phe Ala Ala Arg Ala
 50 55 60
 Val Thr Arg Asn Thr Leu Lys Arg Val Ile Arg Glu Ala Phe Arg Ala
 65 70 75 80
 Arg Arg Leu Ala Leu Pro Ala Gln Asp Tyr Val Val Arg Leu His Ser
 85 90 95
 Lys Leu Thr Pro Ala Ser Leu Thr Ala Leu Lys Arg Ser Ala Arg Ala
 100 105 110
 Glu Val Asp Ala His Phe Thr Arg Ile Ala Arg
 115 120

<210> 31
 <211> 137
 <212> PRT
 <213> Porphyromonas gingivalis

<400> 31
 Met Thr Ser Pro Pro Thr Phe Gly Leu Ser Lys Ser Glu Arg Leu Tyr

1	5	10	15
Leu Arg Asp Glu Ile Asn Thr Val Phe Gly Glu Gly Lys Ala Phe Val			
20	25	30	
Val Tyr Pro Leu Arg Val Val Tyr Arg Leu Gly Ser Glu His Arg Val			
35	40	45	
Ala Tyr Ser Ser Met Leu Val Ser Val Ala Lys Lys Arg Phe Arg Arg			
50	55	60	
Ala Val Lys Arg Asn Arg Val Lys Arg Leu Val Arg Glu Ala Tyr Arg			
65	70	75	80
Leu Asn Lys His Leu Leu Asn Asp Val Leu Gln Glu Arg Gln Ile Tyr			
85	90	95	
Ala Thr Ile Ala Phe Met Val Val Ser Asp Glu Leu Pro Asp Phe Arg			
100	105	110	
Thr Val Glu Arg Ala Met Gln Lys Ser Leu Ile Arg Ile Ala Gly Asn			
115	120	125	
Val Pro Ser Ser Ala Leu Lys Asn Glu			
130	135		

<210> 32
 <211> 124
 <212> PRT
 <213> Streptococcus pneumoniae

<400> 32
Val Leu Lys Lys Asn Phe Arg Val Lys Arg Glu Lys Asp Phe Lys Ala
1 5 10 15
Ile Phe Lys Glu Gly Thr Ser Phe Ala Asn Arg Lys Phe Val Val Tyr
20 25 30
Gln Leu Glu Asn Gln Lys Asn Arg Phe Arg Val Gly Leu Ser Val Ser
35 40 45
Lys Lys Leu Gly Asn Ala Val Thr Arg Asn Gln Ile Lys Arg Arg Ile
50 55 60
Arg His Ile Ile Gln Asn Ala Lys Gly Ser Leu Val Glu Asp Val Asp
65 70 75 80
Phe Val Val Ile Ala Arg Lys Gly Val Glu Thr Leu Gly Tyr Ala Glu
85 90 95
Met Glu Lys Asn Leu Leu His Val Leu Lys Leu Ser Lys Ile Tyr Arg
100 105 110
Glu Gly Asn Gly Ser Glu Lys Glu Thr Lys Val Asp
115 120

<210> 33
 <211> 114
 <212> PRT
 <213> Clostridium difficile

<400> 33
Met Asp Phe Asn Arg Thr Lys Gly Leu Lys Lys Asp Ser Asp Phe Arg
1 5 10 15
Lys Val Tyr Lys His Gly Lys Ser Phe Ala Asn Lys Tyr Leu Val Ile
20 25 30
Tyr Ile Leu Lys Asn Lys Ser Asp Tyr Ser Arg Val Gly Ile Ser Val
35 40 45
Ser Lys Lys Val Gly Lys Ala Ile Thr Arg Asn Arg Val Arg Arg Leu
50 55 60
Ile Lys Glu Ala Tyr Arg Leu Asn Ile Asp Glu Lys Ile Lys Pro Gly
65 70 75 80

Tyr Asp Ile Val Phe Ile Ala Arg Val Ser Ser Lys Asp Ala Thr Phe
85 90 95
Lys Asp Ile Asp Lys Ser Ile Lys Asn Leu Val Lys Arg Thr Asp Ile
100 105 110
Ser Ile

<210> 34
<211> 108
<212> PRT
<213> Camphylobacter jejuni

<400> 34
Val Lys Asn Phe Asp Lys Phe Ser Thr Asn Glu Glu Phe Ser Ser Val
1 5 10 15
Tyr Lys Val Gly Lys Lys Trp His Cys Glu Gly Val Ile Ile Phe Tyr
20 25 30
Leu Asn Ser Tyr Glu Lys Lys Ile Ala Val Val Ala Ser Lys Lys Val
35 40 45
Gly Lys Ala Val Val Arg Asn Arg Ser Lys Arg Ile Leu Arg Ala Leu
50 55 60
Phe Ala Lys Phe Glu Arg Tyr Leu Gln Asp Gly Lys Tyr Ile Phe Val
65 70 75 80
Ala Lys Asn Glu Ile Thr Glu Leu Ser Phe Ser Arg Leu Glu Lys Asn
85 90 95
Leu Lys Trp Gly Leu Lys Lys Leu Glu Cys Phe Lys
100 105

<210> 35
<211> 119
<212> PRT
<213> Bacillus anthracis

<400> 35
Met Lys Lys Lys His Arg Ile Lys Lys Asn Asp Glu Phe Gln Thr Val
1 5 10 15
Phe Gln Lys Gly Lys Ser Asn Ala Asn Arg Gln Phe Val Val Tyr Gln
20 25 30
Leu Asp Lys Glu Glu Gln Pro Asn Phe Arg Ile Gly Leu Ser Val Ser
35 40 45
Lys Lys Ile Gly Asn Ala Val Val Arg Asn Arg Ile Lys Arg Met Ile
50 55 60
Arg Gln Ser Ile Thr Glu Leu Lys Asp Glu Ile Asp Ser Gly Lys Asp
65 70 75 80
Phe Val Ile Ile Ala Arg Lys Pro Cys Ala Glu Met Thr Tyr Glu Glu
85 90 95
Leu Lys Lys Ser Leu Ile His Val Phe Lys Arg Ser Gly Met Lys Arg
100 105 110
Ile Lys Ser Ser Val Arg Lys
115

<210> 36
<211> 119
<212> PRT
<213> Mycobacterium avium

<400> 36
 Val Leu Pro Ala Arg Asn Arg Met Thr Arg Ser Thr Glu Phe Asp Ala
 1 5 10 15
 Thr Val Lys His Gly Thr Arg Met Ala Gln Pro Asp Ile Val Val His
 20 25 30
 Leu Arg Arg Asp Ser Glu Pro Asp Asp Glu Ser Ala Gly Pro Arg Val
 35 40 45
 Gly Leu Val Val Gly Lys Ala Val Gly Thr Ala Val Gln Arg His Arg
 50 55 60
 Val Ala Arg Arg Leu Arg His Val Ala Arg Ala Leu Leu Gly Glu Leu
 65 70 75 80
 Glu Pro Ser Asp Arg Leu Val Ile Arg Ala Leu Pro Gly Ser Arg Thr
 85 90 95
 Ala Ser Ser Ala Arg Leu Ala Gln Glu Leu Gln Arg Cys Leu Arg Arg
 100 105 110
 Met Pro Ala Gly Thr Gly Pro
 115

<210> 37
 <211> 117
 <212> PRT
 <213> Staphylococcus aureus

<400> 37
 Met Leu Leu Glu Lys Ala Tyr Arg Ile Lys Lys Asn Ala Asp Phe Gln
 1 5 10 15
 Arg Ile Tyr Lys Lys Gly His Ser Val Ala Asn Arg Gln Phe Val Val
 20 25 30
 Tyr Thr Cys Asn Asn Lys Glu Ile Asp His Phe Arg Leu Gly Ile Ser
 35 40 45
 Val Ser Lys Lys Leu Gly Asn Ala Val Leu Arg Asn Lys Ile Lys Arg
 50 55 60
 Ala Ile Arg Glu Asn Phe Lys Val His Lys Ser His Ile Leu Ala Lys
 65 70 75 80
 Asp Ile Ile Val Ile Ala Arg Gln Pro Ala Lys Asp Met Thr Thr Leu
 85 90 95
 Gln Ile Gln Asn Ser Leu Glu His Val Leu Lys Ile Ala Lys Val Phe
 100 105 110
 Asn Lys Lys Ile Lys
 115

<210> 38
 <211> 117
 <212> PRT
 <213> Staphylococcus aureus

<400> 38
 Met Leu Leu Glu Lys Ala Tyr Arg Ile Lys Lys Asn Ala Asp Phe Gln
 1 5 10 15
 Arg Ile Tyr Lys Lys Gly His Ser Val Ala Asn Arg Gln Phe Val Val
 20 25 30
 Tyr Thr Cys Asn Asn Lys Glu Ile Asp His Phe Arg Leu Gly Ile Ser
 35 40 45
 Val Ser Lys Lys Leu Gly Asn Ala Val Leu Arg Asn Lys Ile Lys Arg
 50 55 60
 Ala Ile Arg Glu Asn Phe Lys Val His Lys Ser His Ile Leu Ala Lys
 65 70 75 80

Asp Ile Ile Val Ile Ala Arg Gln Pro Ala Lys Asp Met Thr Thr Leu
 85 90 95
 Gln Ile Gln Asn Ser Leu Glu His Val Leu Lys Ile Ala Lys Val Phe
 100 105 110
 Asn Lys Lys Ile Lys
 115

<210> 39
 <211> 71
 <212> PRT
 <213> Escherichia coli

<400> 39
 Leu Arg Leu Leu Thr Pro Ser Gln Phe Thr Phe Val Phe Arg Ile Gly
 1 5 10 15
 Leu Thr Val Ala Lys Lys Asn Val Arg Arg Ala His Glu Arg Asn Arg
 20 25 30
 Ile Lys Arg Leu Thr Arg Glu Ser Phe Arg Leu Arg Gln His Glu Leu
 35 40 45
 Asp Phe Val Val Val Ala Lys Lys Gly Val Ala Asp Leu Asp Asn Arg
 50 55 60
 Ala Leu Ser Glu Ala Leu Glu
 65 70

<210> 40
 <211> 71
 <212> PRT
 <213> Proteus mirabilis

<400> 40
 Leu Arg Leu Leu Thr Pro Lys His Phe Asn Phe Val Phe Arg Ile Gly
 1 5 10 15
 Leu Thr Ile Ala Lys Lys Asn Val Lys Arg Ala His Glu Arg Asn Arg
 20 25 30
 Ile Lys Arg Leu Ala Arg Glu Tyr Phe Arg Leu His Gln His Gln Leu
 35 40 45
 Asp Phe Val Val Leu Val Arg Lys Gly Val Ala Glu Leu Asp Asn His
 50 55 60
 Gln Leu Thr Glu Val Leu Gly
 65 70

<210> 41
 <211> 71
 <212> PRT
 <213> Haemophilus influenzae

<400> 41
 Leu Arg Leu Leu Thr Pro Ile Gln Phe Lys Asn Val Phe Arg Leu Gly
 1 5 10 15
 Leu Thr Val Ala Lys Lys His Leu Lys Arg Ala His Glu Arg Asn Arg
 20 25 30
 Ile Lys Arg Leu Val Arg Glu Ser Phe Arg Leu Ser Gln His Arg Leu
 35 40 45
 Asp Phe Val Phe Val Ala Lys Asn Gly Ile Gly Lys Leu Asp Asn Asn
 50 55 60
 Thr Phe Ala Gln Ile Leu Glu

65

70

<210> 42
 <211> 71
 <212> PRT
 <213> *Pseudomonas putida*

<400> 42
 Lys Asn Leu Leu Thr Pro Arg His Phe Lys Ala Val Phe Arg Leu Gly
 1 5 10 15
 Leu Val Ile Gly Lys Lys Ser Val Lys Leu Ala Val Gln Arg Asn Arg
 20 25 30
 Leu Lys Arg Leu Met Arg Asp Ser Phe Arg Leu Asn Gln Gln Leu Leu
 35 40 45
 Asp Ile Val Ile Val Ala Arg Lys Gly Leu Gly Glu Ile Glu Asn Pro
 50 55 60
 Glu Leu His Gln His Phe Gly
 65 70

<210> 43
 <211> 71
 <212> PRT
 <213> *Buchnera aphidicola*

<400> 43
 Ser Lys Leu Leu Lys Ser Thr Asn Phe Gln Tyr Val Phe Arg Leu Gly
 1 5 10 15
 Leu Ser Ile Ser Arg Lys Asn Ile Lys His Ala Tyr Arg Arg Asn Lys
 20 25 30
 Ile Lys Arg Leu Ile Arg Glu Thr Phe Arg Leu Leu Gln His Arg Leu
 35 40 45
 Asp Phe Val Val Ile Ala Lys Lys Asn Ile Val Tyr Leu Asn Asn Lys
 50 55 60
 Lys Ile Val Asn Ile Leu Glu
 65 70

<210> 44
 <211> 71
 <212> PRT
 <213> *Salmonella typhi*

<220>
 <221> VARIANT
 <222> 31
 <223> Xaa = Any Amino Acid

<400> 44
 Leu Arg Leu Leu Thr Pro Ala His Phe Thr Phe Val Phe Arg Ile Gly
 1 5 10 15
 Leu Thr Val Ala Lys Lys Asn Val Arg Arg Ala His Glu Arg Xaa Arg
 20 25 30
 Ile Lys Arg Leu Thr Arg Glu Ser Phe Arg Leu Arg Gln His Glu Leu
 35 40 45
 Asp Phe Val Val Val Ala Lys Lys Gly Val Ala Asp Leu Asp Asn Arg
 50 55 60
 Ala Leu Ser Glu Ala Leu Glu

65

70

<210> 45
 <211> 71
 <212> PRT
 <213> *Yersinia pestis*

<400> 45
 Leu Arg Leu Leu Thr Pro Ser His Phe Thr Phe Val Phe Arg Ile Gly
 1 5 10 15
 Leu Thr Val Ala Lys Lys His Val Lys Arg Ala His Glu Arg Asn Arg
 20 25 30
 Ile Lys Arg Leu Thr Arg Glu Ser Phe Arg Leu His Gln His Ala Leu
 35 40 45
 Asp Phe Val Val Leu Val Lys Lys Gly Val Ala Asp Leu Asp Asn Arg
 50 55 60
 Ala Leu Thr Glu Ala Leu Glu
 65 70

<210> 46
 <211> 71
 <212> PRT
 <213> *Klebsiella pneumoniae*

<400> 46
 Leu Arg Leu Leu Thr Pro Ser His Phe Thr Phe Val Phe Arg Ile Gly
 1 5 10 15
 Leu Thr Val Ala Lys Lys Asn Val Lys Arg Ala His Glu Arg Asn Arg
 20 25 30
 Ile Lys Arg Leu Thr Arg Glu Ser Phe Arg Leu Arg Gln His Glu Leu
 35 40 45
 Asp Phe Val Val Val Ala Lys Arg Gly Val Ala Asp Leu Asp Asn Arg
 50 55 60
 Ala Leu Ser Glu Ala Leu Glu
 65 70

<210> 47
 <211> 66
 <212> PRT
 <213> *Salmonella paratyphi*

<400> 47
 Ile Arg Leu Pro Ala Thr Ser Thr Arg Ile Gly Leu Thr Val Ala Lys
 1 5 10 15
 Lys Asn Val Arg Arg Ala His Glu Arg Asn Arg Ile Lys Arg Leu Thr
 20 25 30
 Arg Glu Ser Phe Arg Leu Arg Gln His Glu Leu Asp Phe Val Val Val
 35 40 45
 Ala Lys Lys Gly Val Ala Asp Leu Asp Asn Arg Ala Leu Ser Glu Ala
 50 55 60
 Leu Glu
 65

<210> 48
 <211> 71

<212> PRT
<213> *Vibrio cholerae*

<400> 48
Leu Arg Leu Leu Thr Pro Glu His Tyr Gln Lys Val Phe Arg Leu Gly
1 5 10 15
Leu Ala Val Pro Lys Lys Gln Ile Lys Thr Ala Val Gly Arg Asn Arg
20 25 30
Phe Lys Arg Ile Cys Arg Glu Ser Phe Arg Leu His Gln Asn Gln Leu
35 40 45
Asp Phe Val Val Ile Ala Lys Lys Ser Ala Gln Asp Leu Ser Asn Glu
50 55 60
Glu Leu Phe Asn Leu Leu Gly
65 70

<210> 49
<211> 71
<212> PRT
<213> *Pseudomonas aeruginosa*

<400> 49
Lys Arg Leu Leu Thr Ala Arg Gln Phe Ser Ala Val Phe Arg Leu Gly
1 5 10 15
Leu Val Ile Gly Lys Lys Asn Val Lys Leu Ala Val Gln Arg Asn Arg
20 25 30
Leu Lys Arg Leu Ile Arg Glu Ser Phe Arg His Asn Gln Glu Thr Leu
35 40 45
Asp Ile Val Val Ile Ala Arg Lys Gly Leu Gly Glu Leu Glu Asn Pro
50 55 60
Glu Leu His Gln Gln Phe Gly
65 70

<210> 50
<211> 71
<212> PRT
<213> *Shewanella putrefaciens*

C1
Cont
<400> 50
Leu Arg Leu Leu Thr Pro Ala Gln Phe Lys Ser Val Phe Arg Leu Gly
1 5 10 15
Leu Thr Val Ala Lys Arg Tyr Val Lys Arg Ala Asn Gln Arg Asn Arg
20 25 30
Ile Lys Arg Val Ile Arg Asp Ser Phe Arg Leu Asn Gln His Asn Ile
35 40 45
Asp Ile Val Val Leu Val Arg Asn Gly Val Met Glu Met Glu Asn Ala
50 55 60
Glu Leu Asn Gly Leu Ile Glu
65 70

<210> 51
<211> 71
<212> PRT
<213> *Coxiella burnetii*

<400> 51
Trp Arg Ile Arg Thr Thr Ala Glu Phe Arg Arg Ile Tyr Arg Leu Gly

1	5	10	15
Val Val Ala Ser Lys Arg Asn Val Arg Lys Ala Val Trp Arg Asn Arg			
20	25	30	
Val Arg Arg Val Val Lys Glu Ala Phe Arg Ile Arg Lys Lys Asp Leu			
35	40	45	
Asp Ile Val Val Val Ala Lys Ala Ser Ser Val Glu Ala Asp Asn Lys			
50	55	60	
Glu Leu Tyr Glu Cys Ile Asn			
65	70		

<210> 52
 <211> 70
 <212> PRT
 <213> Rickettsia prowazekii

<400> 52
Thr Ser Leu Lys Asn Gln Lys Glu Phe Glu Leu Ile Asn Leu Gly Ile
1 5 10 15
Lys Val Ser Arg Lys Leu Asn Lys Lys Ala Val Val Arg Asn Lys Ile
20 25 30
Lys Arg Arg Ile Arg His Leu Met Arg Ile Ile Val Asn Asp Ser Ala
35 40 45
Ile Ile Ile Ile Pro Lys Lys Gly Phe Glu Glu Ile Asn Phe Ser His
50 55 60
Leu Gln Tyr Glu Leu Ser
65 70

<210> 53
 <211> 73
 <212> PRT
 <213> Caulobacter crescentus

<400> 53
Glu Arg Leu Arg Lys Arg Pro Asp Phe Leu Leu Ala Ala Arg Val Gly
1 5 10 15
Phe Thr Ala Thr Lys Lys Ile Gly Gly Ala Val Glu Arg Asn Arg Ala
20 25 30
Lys Arg Arg Leu Arg Glu Ala Ala Arg Leu Val Leu Pro Leu Asp Tyr
35 40 45
Val Phe Ile Ala Arg Gly Gly Thr Gly Thr Arg Glu Trp Ala Arg Leu
50 55 60
Leu Asp Asp Val Lys Thr Ala Leu Ile
65 70

<210> 54
 <211> 74
 <212> PRT
 <213> Helicobacter pylori 26695

<400> 54
Asp Ser Leu Lys Asn Lys Ser Glu Phe Asp Arg Val Tyr Lys Leu Gly
1 5 10 15
Leu Ser Val Ser Lys Lys Val Gly Asn Ala Val Lys Arg Asn Leu Ile
20 25 30
Lys Arg Arg Leu Arg Ser Leu Thr Leu Lys His Ala Ala Leu Cys Ala
35 40 45

Leu Val Phe Val Pro Arg Ser Asp Cys Tyr His Leu Asp Phe Trp Ala
 50 55 60
 Leu Glu Lys His Phe Leu Glu Met Leu Thr
 65 70

<210> 55
 <211> 74
 <212> PRT
 <213> Helicobacter pylori J99

<400> 55
 Asp Ser Leu Lys Asn Lys Ser Glu Phe Asp Arg Val Tyr Lys Leu Gly
 1 5 10 15
 Leu Ser Val Ser Lys Lys Val Gly Asn Ala Val Lys Arg Asn Leu Ile
 20 25 30
 Lys Arg Arg Leu Arg Ser Leu Val Thr Arg His Ala Ala Leu Cys Ala
 35 40 45
 Leu Val Phe Val Pro Arg Ser Asp Cys Tyr His Leu Asp Phe Trp Ala
 50 55 60
 Leu Glu Lys His Phe Leu Glu Met Leu Thr
 65 70

<210> 56
 <211> 74
 <212> PRT
 <213> Camphylobacter jejuni

<400> 56
 Asp Lys Phe Ser Thr Asn Glu Glu Phe Ser Ser Val Tyr Lys Ile Ala
 1 5 10 15
 Val Val Ala Ser Lys Lys Val Gly Lys Ala Val Val Arg Asn Arg Ser
 20 25 30
 Lys Arg Ile Leu Arg Ala Leu Phe Ala Lys Phe Glu Arg Tyr Leu Lys
 35 40 45
 Tyr Ile Phe Val Ala Lys Asn Glu Ile Thr Glu Leu Ser Phe Ser Arg
 50 55 60
 Leu Glu Lys Asn Leu Lys Trp Gly Leu Lys
 65 70

<210> 57
 <211> 71
 <212> PRT
 <213> Neisseria gonorrhoeae

<400> 57
 Tyr Arg Leu Leu Lys Thr Asp Asp Phe Ser Ser Val Phe Arg Ile Gly
 1 5 10 15
 Leu Val Val Gly Lys Lys Thr Ala Lys Arg Ala Asn Glu Arg Asn Tyr
 20 25 30
 Met Lys Arg Val Ile Arg Asp Trp Phe Arg Leu Asn Lys Asn Arg Leu
 35 40 45
 Asp Phe Val Val Arg Val Arg Arg Lys Phe Asp Arg Ala Thr Ala Lys
 50 55 60
 Gln Ala Arg Ala Glu Leu Ala
 65 70

<210> 58
 <211> 71
 <212> PRT
 <213> Neisseria meningitidis

<400> 58
 Tyr Arg Leu Leu Lys Thr Asp Asp Phe Ser Ser Val Phe Arg Ile Gly
 1 5 10 15
 Leu Val Val Gly Glu Lys Thr Ala Lys Arg Ala Asn Glu Arg Asn Tyr
 20 25 30
 Met Lys Arg Val Ile Arg Asp Trp Phe Arg Leu Asn Lys Asn Arg Leu
 35 40 45
 Asp Phe Val Val Arg Val Arg Arg Lys Phe Asp Arg Ala Thr Ala Lys
 50 55 60
 Gln Ala Arg Ala Glu Leu Ala
 65 70

<210> 59
 <211> 75
 <212> PRT
 <213> Bordetella pertussis

<400> 59
 Ala Arg Leu His Arg Pro Ser Glu Phe Ala Ala Ala Leu Arg Leu Gly
 1 5 10 15
 Leu Val Ile Ala Lys Arg Phe Ala Ala Arg Ala Val Thr Arg Asn Thr
 20 25 30
 Leu Lys Arg Val Ile Arg Glu Ala Phe Arg Ala Arg Arg Leu Ala Leu
 35 40 45
 Asp Tyr Val Val Arg Leu His Ser Lys Leu Thr Pro Ala Ser Leu Thr
 50 55 60
 Ala Leu Lys Arg Ser Ala Arg Ala Glu Val Asp
 65 70 75

<210> 60
 <211> 70
 <212> PRT
 <213> Thiobacillus ferrooxidans

<400> 60
 Asp Arg Leu Arg Gln Lys Val Ala Ile Gln Arg Thr Leu Arg Leu Gly
 1 5 10 15
 Leu Ala Val Ser Arg Lys Val Gly Asn Ala Val Val Arg Asn Arg Ile
 20 25 30
 Lys Arg Arg Leu Arg Glu Ala Phe Arg Gln Gln Ser Val Arg Thr Asp
 35 40 45
 Val Leu Val Val Ala Arg Pro Ser Ala Arg Gln Leu Ser Met Arg Ala
 50 55 60
 Met Gly Ala Tyr Leu Gln
 65 70

<210> 61
 <211> 70
 <212> PRT
 <213> Streptomyces bikiniensis

<400> 61
 Asn Arg Leu Arg Arg Arg Glu Asp Phe Ala Thr Ala Val Arg Ala Gly
 1 5 10 15
 Phe Val Val Ser Lys Ala Val Gly Gly Ala Val Val Arg Asn Gln Val
 20 25 30
 Lys Arg Arg Leu Lys His Leu Val Cys Asp Arg Leu Ser Ala Leu Leu
 35 40 45
 Val Val Val Arg Ala Leu Pro Gly Ala Gly Asp Ala Asp His Ala Gln
 50 55 60
 Leu Ala Arg Asp Leu Asp
 65 70

<210> 62
 <211> 70
 <212> PRT
 <213> Streptomyces coelicolor

<400> 62
 Asn Arg Leu Arg Arg Arg Glu Asp Phe Ala Thr Ala Val Arg Ala Gly
 1 5 10 15
 Phe Val Val Ser Lys Ala Val Gly Val Ala Val Val Arg Asn Lys Val
 20 25 30
 Lys Arg Arg Leu Arg His Leu Met Arg Asp Arg Ile Asp Leu Leu Leu
 35 40 45
 Val Val Val Arg Ala Leu Pro Gly Ala Gly Asp Ala Asp His Ala Gln
 50 55 60
 Leu Ala Arg Asp Leu Asp
 65 70

<210> 63
 <211> 74
 <212> PRT
 <213> Micrococcus luteus

<400> 63
 Arg Arg Val Arg Thr Pro Ala Glu Phe Arg His Leu Gly Arg Ala Gly
 1 5 10 15
 Phe Val Val Ser Lys Ala Val Gly Asn Ala Val Thr Arg Asn Arg Val
 20 25 30
 Lys Arg Arg Leu Arg Ala Val Val Ala Glu Gln Met Arg Leu Val Leu
 35 40 45
 Val Gln Val Arg Ala Leu Pro Ala Ala Ala Glu Ala Asp Tyr Ala Leu
 50 55 60
 Leu Arg Arg Glu Thr Val Gly Ala Leu Gly
 65 70

<210> 64
 <211> 71
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 64
 Asn Arg Met Arg Arg Ser Ala Asp Phe Glu Thr Thr Val Arg Val Gly
 1 5 10 15
 Leu Ile Ile Ala Lys Ser Val Gly Ser Ala Val Glu Arg His Arg Val
 20 25 30

Ala Arg Arg Leu Arg His Val Ala Gly Ser Ile Val Lys Glu Leu Asp
 35 40 45
 His Val Val Ile Arg Ala Leu Pro Ser Ser Arg His Val Ser Ser Ala
 50 55 60
 Arg Leu Glu Gln Gln Leu Arg
 65 70

<210> 65
 <211> 71
 <212> PRT
 <213> Mycobacterium leprae

<400> 65
 Asn Arg Met Arg Arg Ser Ser Glu Phe Asp Ala Thr Val His Val Gly
 1 5 10 15
 Leu Ile Ile Ala Lys Thr Val Gly Ser Ala Val Glu Arg His Arg Val
 20 25 30
 Ala Arg Arg Leu Arg His Val Ala Arg Thr Met Leu Gly Glu Leu Asp
 35 40 45
 Gln Val Val Ile Arg Ala Leu Pro Ser Ser Arg Asn Val Ser Ser Ala
 50 55 60
 Trp Leu Ala Gln Gln Leu Arg
 65 70

<210> 66
 <211> 71
 <212> PRT
 <213> Mycobacterium bovis

<400> 66
 Asn Arg Met Arg Arg Ser Ala Asp Phe Glu Thr Thr Val Arg Val Gly
 1 5 10 15
 Leu Ile Ile Ala Lys Ser Val Gly Ser Ala Val Glu Arg His Arg Val
 20 25 30
 Ala Arg Arg Leu Arg His Val Ala Gly Ser Ile Val Lys Glu Leu Asp
 35 40 45
 His Val Val Ile Arg Ala Leu Pro Ser Ser Arg His Val Ser Ser Ala
 50 55 60
 Arg Leu Glu Gln Gln Leu Arg
 65 70

<210> 67
 <211> 71
 <212> PRT
 <213> Mycobacterium avium

<400> 67
 Asn Arg Met Thr Arg Ser Thr Glu Phe Asp Ala Thr Val Arg Val Gly
 1 5 10 15
 Leu Val Val Gly Lys Ala Val Gly Thr Ala Val Gln Arg His Arg Val
 20 25 30
 Ala Arg Arg Leu Arg His Val Ala Arg Ala Leu Leu Gly Glu Leu Asp
 35 40 45
 Arg Leu Val Ile Arg Ala Leu Pro Gly Ser Arg Thr Ala Ser Ser Ala
 50 55 60
 Arg Leu Ala Gln Glu Leu Gln

65

70

<210> 68
 <211> 50
 <212> PRT
 <213> Corynebacterium diphtheriae

<400> 68
 His Lys Leu Ser Gln Phe Arg Ala Thr Ile Arg Phe Gly Leu Val Val
 1 5 10 15
 Ser Lys Ala Val Gly Asn Ala Val Thr Arg His Arg Val Ser Arg Gln
 20 25 30
 Leu Arg His Phe His Val Val Glu Leu Arg Ala Asp Val Gln Ala Ala
 35 40 45
 Leu Asp
 50

<210> 69
 <211> 3
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic

<400> 69
 Lys Asn Glu
 1

<210> 70
 <211> 8
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic

<400> 70
 Ala Phe Leu Glu Glu Lys Glu Arg
 1 5

<210> 71
 <211> 8
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic

<400> 71
 Ile Ala Arg Lys Pro Ala Ser Gln
 1 5

<210> 72

<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 72
Leu Thr Tyr Glu
1

<210> 73
<211> 70
<212> PRT
<213> Bacillus subtilis

<400> 73
Asn Arg Leu Lys Arg Ser Asp Asp Phe Arg Lys Val Phe Arg Val Gly
1 5 10 15
Leu Ser Val Ser Lys Lys Ile Gly Asn Ala Val Met Arg Asn Arg Ile
20 25 30
Lys Arg Leu Ile Arg Gln Phe Phe Gln Glu His Glu Gln Ala Leu Asp
35 40 45
Tyr Ile Ile Ala Arg Lys Pro Ala Ala Asp Met Thr Tyr Glu Glu
50 55 60
Thr Lys Lys Ser Leu Gln
65 70

<210> 74
<211> 69
<212> PRT
<213> Bacillus halodurans

<400> 74
His Arg Ile Lys Lys Asn Asp Glu Phe Ser Arg Val Phe Arg Val Leu
1 5 10 15
Ser Val Ser Lys Lys Ile Gly Asn Ala Val Thr Arg Asn Arg Val Lys
20 25 30
Arg Leu Ile Arg Thr Ser Ile Thr Glu Leu Lys Asp Glu Ile Asp Tyr
35 40 45
Val Ile Ile Ala Arg Lys Pro Cys Ala Glu Met Thr Tyr Glu Gln Val
50 55 60
Lys Gly Ser Leu Trp
65

<210> 75
<211> 70
<212> PRT
<213> Bacillus anthracis

<400> 75
His Arg Ile Lys Lys Asn Phe Glu Phe Gln Thr Val Phe Arg Ile Gly
1 5 10 15
Leu Ser Val Ser Lys Lys Ile Gly Asn Ala Val Val Arg Asn Arg Ile
20 25 30
Lys Arg Met Ile Arg Gln Ile Leu Lys Gln Asn Ile Ser Glu Ile Asp

35 40 45
 Phe Val Ile Leu Val Arg Lys Ser Val Leu Glu Leu Lys Tyr Ala Glu
 50 55 60
 Leu Lys Lys Ser Leu Ile
 65 70

<210> 76
 <211> 70
 <212> PRT
 <213> Mycoplasma capricolum

<400> 76
 Arg Val Ile Lys Asp Arg Lys Glu Phe Gln Glu Ile Ile Lys Tyr Gly
 1 5 10 15
 Ile Ser Val Gly Lys Lys Ile Gly Asn Ala Val Ile Arg Asn Lys Val
 20 25 30
 Lys Arg Gln Ile Arg Met Ile Met Arg Glu Gln Phe Cys Asn Ile Asp
 35 40 45
 Ile Ile Ile Ile Ile Asn Gln Gly Phe Leu Glu Leu Thr Phe Lys Thr
 50 55 60
 Leu Ser Lys Leu Leu Ile
 65 70

<210> 77
 <211> 71
 <212> PRT
 <213> Mycoplasma pneumoniae

<400> 77
 His His Leu Arg Glu Arg Lys Val Phe Ala Ala Leu Leu Arg Ala Ala
 1 5 10 15
 Val Ser Ile Ser Lys Thr Lys Tyr Lys Leu Ala Val Glu Arg Asn Leu
 20 25 30
 Ile Arg Arg Gln Val Lys Ala Ile Phe Gln Gln Ile Ser Asn Asn Leu
 35 40 45
 Asp Val Leu Val Ile Val Asn Lys Gly Phe Ile Glu Leu Thr Phe Lys
 50 55 60
 Glu Lys Gln Thr Ile Phe Leu
 65 70

<210> 78
 <211> 71
 <212> PRT
 <213> Mycoplasma genitalium

<400> 78
 His Ser Leu Arg Arg Glu Lys Val Phe Thr Thr Ile Leu Arg Val Ala
 1 5 10 15
 Ile Ser Ile Ala Lys Thr Lys Tyr Lys Leu Ala Val Gln Arg Asn Leu
 20 25 30
 Ile Lys Arg Gln Ile Arg Ser Val Ile Met Ala Leu Gly His Gln Leu
 35 40 45
 Asp Ile Leu Val Ile Ala Arg Lys Gly Val Glu Ser Leu Glu Tyr Gln
 50 55 60
 Glu Lys Gln Lys Leu Phe Leu
 65 70

<210> 79
 <211> 68
 <212> PRT
 <213> Streptococcus pyogenes

<400> 79
 Val Lys Ser Asp Lys Asp Phe Gln Ala Ile Phe Arg Val Gly Ile Ser
 1 5 10 15
 Val Gly Lys Lys Ile Gly Asn Ala Val Thr Arg Asn Ala Val Lys Arg
 20 25 30
 Lys Ile Arg His Val Leu Met Glu Leu Gly Pro Tyr Leu Asp Phe Val
 35 40 45
 Val Ile Ala Arg Lys Gly Val Glu Glu Leu Asp Tyr Ser Glu Leu Gln
 50 55 60
 Gln Asn Leu His
 65

<210> 80
 <211> 70
 <212> PRT
 <213> Streptococcus mutans

<400> 80
 Tyr Arg Val Lys Arg Glu Lys Asp Phe Gln Ala Ile Phe Arg Val Gly
 1 5 10 15
 Leu Ser Val Gly Lys Arg Leu Gly Asn Ala Val Val Arg Asn Ala Ile
 20 25 30
 Lys Arg Lys Leu Arg His Ile Ile Gln Asn Ala Lys Gly Ser Leu Asp
 35 40 45
 Phe Val Val Ile Ala Arg Lys Gly Val Glu Thr Leu Gly Tyr Ala Thr
 50 55 60
 Met Lys Lys Asn Leu Val
 65 70

<210> 81
 <211> 70
 <212> PRT
 <213> Streptococcus pneumoniae

<400> 81
 Phe Arg Val Lys Lys Asn Ala Asp Phe Lys Ala Ile Phe Arg Val Gly
 1 5 10 15
 Leu Ser Val Ser Lys Lys Leu Gly Asn Ala Val Thr Arg Asn Gln Ile
 20 25 30
 Lys Arg Arg Ile Arg His Asn Phe Lys Val His Lys Ser His Leu Asp
 35 40 45
 Phe Val Val Ile Ala Arg Gln Pro Ala Lys Asp Met Thr Thr Leu Glu
 50 55 60
 Met Glu Lys Asn Leu Leu
 65 70

<210> 82
 <211> 70
 <212> PRT
 <213> Staphylococcus aureus NCTC

C1
 cont.

<400> 82
 Tyr Arg Ile Lys Lys Asn Ala Asp Phe Gln Arg Ile Tyr Arg Leu Gly
 1 5 10 15
 Ile Ser Val Ser Lys Lys Leu Gly Asn Ala Val Leu Arg Asn Lys Ile
 20 25 30
 Lys Arg Ala Ile Arg Glu Asn Phe Lys Val His Lys Ser His Ile Asp
 35 40 45
 Ile Ile Val Ile Ala Arg Gln Pro Ala Lys Asp Met Thr Thr Leu Gln
 50 55 60
 Ile Gln Asn Ser Leu Glu
 65 70

<210> 83
 <211> 70
 <212> PRT
 <213> Staphylococcus aureus COL

<400> 83
 Tyr Arg Ile Lys Lys Asp Ser Asp Phe Gln Arg Ile Tyr Arg Leu Gly
 1 5 10 15
 Ile Ser Val Ser Lys Lys Leu Gly Asn Ala Val Leu Arg Asn Lys Ile
 20 25 30
 Lys Arg Ala Ile Arg Glu Ala Tyr Arg Leu Asn Ile Asp Glu Lys Ile
 35 40 45
 Asp Ile Ile Val Ile Ala Arg Val Ser Ser Lys Asp Ile Asp Lys Gln
 50 55 60
 Ile Gln Asn Ser Leu Glu
 65 70

<210> 84
 <211> 70
 <212> PRT
 <213> Clostridium difficile

<400> 84
 Lys Gly Leu Lys Asn Ser Glu Asp Phe Arg Lys Val Tyr Arg Val Gly
 1 5 10 15
 Ile Ser Val Ser Lys Lys Val Gly Lys Ala Ile Thr Arg Asn Arg Val
 20 25 30
 Arg Arg Leu Ile Lys Glu Val Val Ile Ala Met Lys Asp Gln Ile Asp
 35 40 45
 Ile Val Phe Val Arg Ala Ile Pro Pro Ala Ala Thr Ala Ser Tyr Glu
 50 55 60
 Ser Ile Lys Asn Leu Val
 65 70

<210> 85
 <211> 71
 <212> PRT
 <213> Synechocystis PCC6803

<400> 85
 Leu Arg Leu Lys His Trp Gln Asp Phe Gln Thr Val Tyr Arg Phe Gly
 1 5 10 15
 Ile Thr Val Ser Gln Lys Val Ser Lys Lys Ala Thr Val Arg Asn Arg
 20 25 30

Leu Lys Arg Gln Ile Arg Ala Val Ile Asn His Phe Gln Pro Gln Ile
 35 40 45
 Asp Val Val Ile Ile Val Leu Pro Gln Gly Ile Gly Cys Asn Tyr Glu
 50 55 60
 Arg Phe Leu Arg Glu Leu Glu
 65 70

<210> 86
 <211> 71
 <212> PRT
 <213> Pseudanabaena PCC6903

<400> 86
 Asn Arg Leu Arg Arg Arg Glu Asp Phe Ala Lys Val Tyr Arg Ile Gly
 1 5 10 15
 Ile Val Val Ser Lys Lys Val Ser Lys Leu Ala Val Thr Arg Asn Arg
 20 25 30
 Phe Lys Arg Gln Leu Arg Ala Ile Phe Arg Gln Leu Leu Ser Gln Leu
 35 40 45
 Gln Ile Val Val Thr Val Thr Thr Val Ala Ser Lys Pro Asn Tyr Gln
 50 55 60
 Glu Leu Gly Asp Asp Leu Lys
 65 70

<210> 87
 <211> 70
 <212> PRT
 <213> Borrelia burgdorferi

<400> 87
 Ile Ser Leu Lys Ser Lys Ile Glu Ile Gln Lys Ile Phe Arg Ile Leu
 1 5 10 15
 Val Thr Phe Ser Lys Gly Phe Arg Gly Ser Val Lys Arg Asn Arg Ile
 20 25 30
 Arg Arg Leu Phe Lys Glu Ala Phe Arg Lys Arg Leu Glu Leu Leu Asp
 35 40 45
 Ile Ile Phe Val Val Ser Tyr Gly Lys Leu Thr Leu Thr Tyr Phe Ser
 50 55 60
 Ile Glu Ser Leu Met Lys
 65 70

<210> 88
 <211> 71
 <212> PRT
 <213> Treponema pallidum

<400> 88
 Glu Arg Leu Arg Gly Ser Cys Arg Val Arg Ala Val Phe Arg Phe Leu
 1 5 10 15
 Ala Thr Phe Arg Arg Gly Tyr Gly Lys Ala Val Ala Arg Asn Arg Ala
 20 25 30
 Arg Arg Leu Ser Lys Glu Ala Tyr Arg Ala Leu Lys Ser Ser Leu Asp
 35 40 45
 Leu Val Leu Leu Val Ser Val Val Glu Asp Ser Leu Ala Ala Tyr Gln
 50 55 60
 Arg Leu Leu Cys Val Leu Cys

65

70

<210> 89
 <211> 73
 <212> PRT
 <213> Chlamydia trachomatis

<400> 89
 Ala Arg Leu Leu Lys Arg Lys Gln Phe Val Tyr Val Gln Lys Val Gly
 1 5 10 15
 Ile Thr Val Ser Lys Lys Phe Gly Lys Ala His Gln Arg Asn Arg Phe
 20 25 30
 Lys Arg Ile Val Arg Glu Ala Phe Arg His Val Arg Pro Asn Leu Gln
 35 40 45
 Val Val Ile Ser Pro Arg Gly Asn Ser Gln Pro Asp Phe Leu Lys Leu
 50 55 60
 Ser Glu Glu Leu Leu Gln Arg Ile Pro
 65 70

<210> 90
 <211> 73
 <212> PRT
 <213> Chlamydia trachomatis MoPn

<400> 90
 Ala Arg Leu Leu Lys Arg Lys Gln Phe Val Tyr Val Gln Lys Val Gly
 1 5 10 15
 Val Thr Val Ser Lys Lys Phe Gly Lys Ala His Gln Arg Asn Arg Phe
 20 25 30
 Lys Arg Ile Val Arg Glu Ala Phe Arg His Val Arg Pro Asn Leu Gln
 35 40 45
 Val Val Val Ser Pro Lys Gly Thr Leu Pro Asn Phe Gly Lys Leu
 50 55 60
 Ser Ala Asp Leu Leu Lys His Ile Pro
 65 70

<210> 91
 <211> 74
 <212> PRT
 <213> Chlamydia pneumoniae

<400> 91
 Ser Arg Val Leu Lys Arg Lys Gln Phe Leu Tyr Ile Thr Arg Met Gly
 1 5 10 15
 Ile Thr Val Ser Lys Lys Phe Gly Lys Ala His Glu Arg Asn Ser Phe
 20 25 30
 Lys Arg Val Val Arg Glu Val Phe Arg His Val Arg His Gln Leu Gln
 35 40 45
 Ile Val Val Phe Pro Lys Gly His Lys Gln Arg Pro Val Phe Ser Lys
 50 55 60
 Leu Leu Gln Asp Phe Ile Asn Gln Ile Pro
 65 70

<210> 92
 <211> 74

<212> PRT
<213> Thermotoga maritima

<400> 92
Glu Arg Leu Arg Leu Arg Arg Asp Phe Leu Leu Ile Phe Arg Leu Gly
1 5 10 15
Ile Val Val Lys Arg Lys Phe Gly Lys Ala Thr Arg Arg Asn Lys Leu
20 25 30
Lys Arg Trp Val Arg Glu Ile Phe Arg Arg Asn Lys Gly Val Ile Asp
35 40 45
Ile Val Val Ile Pro Arg Lys Lys Leu Ser Glu Glu Phe Glu Arg Val
50 55 60
Asp Phe Trp Thr Val Arg Glu Lys Leu Leu
65 70

<210> 93
<211> 78
<212> PRT
<213> Porphyromonas gingivalis

<400> 93
Glu Arg Leu Tyr Leu Arg Asp Glu Ile Asn Thr Val Phe Ser Met Leu
1 5 10 15
Val Ser Val Ala Lys Lys Arg Phe Arg Arg Ala Val Lys Arg Asn Arg
20 25 30
Val Arg Arg Leu Val Arg Glu Ala Tyr Arg Leu Asn Lys His Leu Leu
35 40 45
Asp Val Leu Gln Glu Arg Gln Ile Tyr Ala Thr Ile Ala Phe Met Val
50 55 60
Val Ser Asp Glu Leu Pro Asp Phe Arg Thr Val Glu Arg Ala
65 70 75

<210> 94
<211> 77
<212> PRT
<213> Deinococcus radiodurans

<400> 94
Leu Arg Gly Glu Arg Glu Phe Arg Lys Val Arg Arg Ile Gly Leu Val
1 5 10 15
Val Ser Lys Lys Thr Leu Lys His Ala Val Lys Arg Asn Arg Ala Arg
20 25 30
Arg Arg Val Arg Glu Ala Leu Arg Thr Met Pro Pro Glu Leu Arg Ala
35 40 45
Ile Leu Met Leu Asn Pro Gly Val Leu Thr Val Pro Phe Pro Glu Leu
50 55 60
Gln Ala Ala Leu Ala Gln Ala Leu Gln Arg Gly Ala Gly
65 70 75

<210> 95
<211> 75
<212> PRT
<213> Chlorobium tepidum

<400> 95
Ala Arg Leu Lys Gly Gly Phe Leu Leu Leu Ile Arg Val Leu Phe Thr

1				5					10				15
Val	Gly	Lys	Lys	Leu	Val	Pro	Arg	Ala	Val	Asp	Arg	Asn	Arg
			20					25				30	
Arg	Leu	Met	Arg	Glu	Ala	Tyr	Arg	Leu	Glu	Lys	Asn	Ile	Leu
		35					40					45	
Gln	Val	Met	Leu	Ala	Phe	Leu	Tyr	Arg	Ala	Arg	Ala	Asp	Ala
	50					55					60		
Ser	Leu	Glu	Arg	Phe	Arg	Ala	Ile	Arg	His	Met			
65					70					75			
